

Country Name	Freshwater Aquaculture Improvement and Extension Project Phase 2																
Kingdom of Cambodia																	
I. Project Outline																	
Background	<p>In Cambodia, the supply of freshwater fish had always been short in rural areas, which was disturbing the improvement of nutrition condition of local farmers. In addition, in order to diversify the variety of food products, improve the nutrition by protein intake, and generate cash income sources, the demand of small-scale fish culture, utilizing paddy fields, canals, and ponds, was very high. However, because rural communities had not experienced fish culture traditionally, the shortages of knowledge of fish culture and fish seed hindered the fish culture practices at farmers' households. Under such situation, Cambodian Government, with the assistance of Japanese Government, conducted the Freshwater Aquaculture Improvement and Extension Project (FAIEX-1) at four southern provinces from 2005 to 2010. The project could disseminate fish culture to more than 9,000 famers' households by project completion, which was more than twice as much as the planned objective number. Hence, Cambodian Government appreciated the project outputs and requested FAIEX-2 (Phase 2) for the north-western region, where the poverty level was much higher.</p>																
Objectives of the Project	<p>Through improving small-scale seed production and grow-out technology and capacity of local aquaculture extension services, capacitating Fish Seed Producers (FSPs), and expanding small-scale aquaculture and networks of FSPs, the project aimed at increasing small-scale aquaculture production in the target provinces, thereby improving household economy of small-scale fish farmers.</p> <ol style="list-style-type: none"> Overall Goal: Household economy of small-scale fish farmers are improved in the target provinces. Project Purpose: Small-scale aquaculture production is increased in the target provinces. 																
Activities of the Project	<ol style="list-style-type: none"> Project Site: Pursat, Battambang and Siem Reap provinces Main Activities: (1) Conduct technical improvement at the Toek Vil Fish Seed Production Station and verification trials at seed farmers and small-scale fish farmers, and develop technical manuals adaptive to the target provinces by revising the FAIEX-1 manuals; (2) Clarify roles and functions of local extension staff at each level of Fisheries Administration (FiA) (Cantonment, Division, and Sangkat) and local authorities, conduct training on seed production technology, grow-out technology and extension methods for local extension staff, and draw up an extension guideline and good practices; (3) Select target communes and FSPs, conduct training on seed production for the FSPs, and assist the FSPs in their seed production activities; (4) Conduct training of trainers (TOT) on grow-out technology for the FSPs, assist FSPs to conduct farmer-to-farmer (FTF) training for small-scale fish farmers, select Community Fish Refuges (CFRs) for resource enhancement, support CFR activities and prepare the CFR implementation manual, and disseminate information of small-scale aquaculture among farmers and local extension staff, and (5) Facilitate FSPs to establish a provincial network to strengthen cooperation among FSPs in each target province and inter-networks in the target provinces, and promote cooperation among the networks of FAIEX-2 and FAIEX-1 etc. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Cambodian Side</td> </tr> <tr> <td>1) Experts: 7 persons</td> <td>1. Staff allocated: 28 persons</td> </tr> <tr> <td>2) Trainees Received in Japan: 2 persons</td> <td>2. Project offices and facilities</td> </tr> <tr> <td>3) Trainees received in Third Country (Indonesia and India): 44 persons</td> <td>3. Construction and development of aquaculture ponds</td> </tr> <tr> <td>4) Facility improvement of the Toek Vil Fish Seed Production Station</td> <td>4. Local operation cost</td> </tr> <tr> <td>5) Equipment: motorbikes, 4WD vehicles, office equipment and laboratory and hatchery equipment etc.</td> <td></td> </tr> <tr> <td>6) Local operation cost</td> <td></td> </tr> </table> 			Japanese Side	Cambodian Side	1) Experts: 7 persons	1. Staff allocated: 28 persons	2) Trainees Received in Japan: 2 persons	2. Project offices and facilities	3) Trainees received in Third Country (Indonesia and India): 44 persons	3. Construction and development of aquaculture ponds	4) Facility improvement of the Toek Vil Fish Seed Production Station	4. Local operation cost	5) Equipment: motorbikes, 4WD vehicles, office equipment and laboratory and hatchery equipment etc.		6) Local operation cost	
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Project Period	March 2011 – February 2015	Project Cost	(ex-ante) 358 million yen, (actual) 445 million yen														
Implementing Agency	Fisheries Administration (FiA), Ministry of Agriculture, Forestry and Fisheries																
Cooperation Agency in Japan	INTEM Consulting Inc. and IC NET Limited (JV)																

II. Result of the Evaluation

<Constraints on Evaluation>

- [How to verify the continuation status of project effects (Project Purpose)] According to the Project Completion Report, statistics on fisheries in Cambodia do not publicize production volume of different sizes of aquaculture, and categories of data on production volume owned in each Cantonment office also differ in each office. Thus, statistical data on production volume for 'small-scale aquaculture' does not exist and thus needs to be estimated. Therefore, the continuation status of Project Purpose indicator ("Annual production of small-scale aquaculture promoted by the Project is increased up to 150 tons in target areas in 2015.") since project completion was verified by calculating "(1) Number of small-scale fish farmers who continue fish culture", "(2) Average pond size among small-scale fish farmers (m²)", and "(3) Average productivity among small-scale fish farmers (kg/100m²)", through interviews with project counterparts (C/Ps) in FiA Cantonment offices in each province and/or leaders of FSP networks.

1 Relevance

<Consistency with the Development Policy of Cambodia at the Time of Ex-Ante Evaluation and Project Completion>

The project was consistent with Cambodia’s development policies such as “promotion of aquaculture” and “sustainability of aquaculture production” as set forth in “National Strategic Development Plan (NSDP) (2009-2013)”, “Fisheries Development Action Plan (2010-2012)”, “NSDP (2014-2018)” and “the National Aquaculture Development Strategy (2014)”.

<Consistency with the Development Needs of Cambodia at the Time of Ex-Ante Evaluation and Project Completion>

The project was consistent with Cambodia’s development needs for increasing freshwater aquaculture production at the times of both ex-ante evaluation and project completion.

<Consistency with Japan’s ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan’s ODA policy as stated in “the Country Assistance Program for Cambodia” (2002) (which included promotion of the fisheries industry and conservation and appropriate management of aquatic resources).

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose had been achieved by the time of project completion. As stated above, annual production volume of small-scale aquaculture was unavailable and needed to be estimated as below: (1) the number of small-scale fish farmers trained under the project was 3,425; (2) the percentage of farmers who would continue fish culture (retention rate) ranged from 60 to 80% according to C/Ps in target provinces and questionnaire surveys conducted by the project; (3) the average pond size of small-scale fish farmers was 219 m²; and (4) the average production volume of small-scale fish farmers ranged from 30 to 35 kg/100 m² according to questionnaire surveys conducted by the project. Based on these conditions, the annual production volume in total in the target provinces was estimated as 135 to 210 tons, and except a case of which assumed the retention rate as 60% and the productivity as 30 kg/100m², the amount of production was considered higher than the targeted 150 tons.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued to the time of ex-post evaluation. Total production volume of small-scale aquaculture in the target provinces in 2017 was 129 tons, which is 86% of the target. The reason for not achieving the target is the decrease of the number of small-scale fish farmers after project completion due to a lack of water during fish culture season (due to climate change), expensive fish feed and migration to urban areas for work. However, the average productivity among small-scale fish farmers has been kept at the same or even higher level than that at the time of project completion, and the total of 124 small-scale fish farmers, who moved to remote area such as Thai border, have newly started small-scale aquaculture after project completion.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has not been achieved by the time of ex-post evaluation. The number of small-scale fish farmers who have increased profits and/or savings from fish farming in 2017 was 150 in Pursat province (the data was unavailable in other two provinces), which is 3% only against the target. There might be a possibility that marketing activities and strategies were not sufficiently implemented under the project. However, it is generally observed that small-scale fish farmers can improve their livelihood because they can have fish from their fish ponds anytime they like, instead of spending money to purchase fish from the market. It means they may increase savings from fish farming.

<Other Impacts at the time of Ex-post Evaluation>

The aquaculture extension methods, which were introduced by the project, have enabled the FSPs network to share the information widely on both fish seed production techniques and marketing of fish seed supply. As results, some NGOs such as HARVEST, HKI (Helen Keller International) and WorldFish have utilized this network function for their aquaculture projects. The rice-cum-fish culture technology, which was promoted under the project, has been introduced to other communities in Kampong Cham, Kampong Thom and Preah Vihear provinces after project completion. Moreover, women participated in fish culture activities under the project such as planning, preparing, fertilizing and maintaining ponds, feeding and harvesting. Through these activities, it has been recognized that women have capacity to undertake aquaculture ventures as better source of livelihood income.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results				
(Project Purpose) Small-scale aquaculture production is increased in the target provinces.	Annual production of small-scale aquaculture promoted by the Project is increased up to 150 tons in target areas in 2015.	Status of the Achievement: achieved (continued) (Project Completion) Annual production volume was estimated to be higher than 150 tons except a case of which assumed the retention rate as 60% and the productivity as 30 kg/100m ² . (As of August 2014)				
		[Estimated aquaculture production of small-scale farmers]				
		Number of small-scale farmers trained	Supposed % of farmers continuing fish culture	Average pond size	Average productivity (kg/100m ²)	Aquaculture production by small-scale farmer (ton)
		3,425	60% 70% 80%	219 m ²	30 ~ 35	135 ~ 158 158 ~ 184 180 ~ 210
		(Ex-post Evaluation) Annual production volume in 2017 was 86% of the target.				
		[Estimated aquaculture production of small-scale farmers]				
		Number of small-scale farmers continuing fish culture in 2017	Average pond size	Average productivity (kg/100m ²) in 2017	Aquaculture production by small-scale farmer (ton) in 2017	

		Pursat	713	145 m ²	50	52	
		Battambang	1,045	150 m ²	30	47	
		Siem Reap	559	120 m ²	45	30	
		Total				129	
(Overall Goal) Household economy of small-scale fish farmers are improved in the target provinces.	The number of small-scale fish farmers with increased profits* ¹ and savings* ² from fish farming is increased by 5,000 households in target areas by 2018.	(Ex-post Evaluation) not achieved The number of small-scale fish farmers who have increased profits/savings from fish farming in 2017 was 150 only in Pursat province (data was unavailable in other two provinces). However, it is generally observed that small-scale fish farmers can improve their livelihood because of not spending money to purchase fish; which means they may increase savings from fish farming.					

Note *1 "Profit" is given by subtracting "production cost" from "fish sales income of cultured fish."

*2 "Saving" is given by self-consumption of cultured fish, which would otherwise be expenses for purchase of fish in the market, i.e., by subtracting "present cost to purchase fish" from "previous cost to purchase fish."

Source : Terminal Evaluation Report, interviews with FiA, FSPs and small-scale fish farmers

3 Efficiency

The project cost exceeded the plan, while the project period was within the plan (ratio against plan: 124%, 100%, respectively). The outputs of the project were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The needs for promotion of aquaculture are stated in "the National Strategic Plan for Aquaculture Development (2016-2030)".

<Institutional Aspect>

In Pursat province, the number of staff is six at FiA Cantonment office, two at Division office and nine at Sangkat office, and there are 12 contract staffs working at Sangkat office. In Battambang province, the number of staff is 11 at FiA Cantonment office, six at Division office and 11 at Sangkat office. In Siem Reap province, the number of staff is 13 at FiA Cantonment office, 22 at Division office and Sangkat office, and there are seven contract staffs working at these offices. While certain number of staff is assigned¹, the number of staff above is not sufficient for FiA Cantonment office to conduct extension activities on grow-out and seed production technology as same as during the project, due to retirement of a large number of staff and many staff going abroad for study by Developing Partners' programs, such as programs of JICA (Agri-net), KOIKA (Capacity Improvement and Advance for Tomorrow (CIAT)) and Can Tho University with Belgium University. However, FiA keeps it in order to strengthen each staff capacity instead of increasing staff number for more effective human resources management. In addition, there are only two staffs working at Toek Vile Fish Seed Production Station, which is insufficient to respond to farmers' needs and technical problems and supply quality broodstock to FSPs. While the Station has requested FiA to assign new staff, no new staff has been allocated, in order to strengthen each staff capacity instead of increasing staff number for more effective human resources management. Nonetheless, FiA has dispatched temporary staff to respond to requests from FiA Cantonment office and Toek Vile Fish Seed Production Station during the high season of aquaculture.

<Technical Aspect>

The majority of C/Ps still work at FiA Central and Cantonment offices at the time of ex-post evaluation. According to FiA, the skill level of staff in FiA Central, Cantonment, Division and Sangkat offices is not sufficient to conduct extension activities, and particularly many newly recruited staff require more knowledge and skills to provide technical advices for farmers and conduct extension activities. The skill level of staff at Toek Vile Fish Seed Production Station is also not sufficient, and the Station has requested FiA to provide trainings for staff on fish diseases, hormone, nutrition, and breeding and hatchery skills etc, and FiA sent the Toek Vile station staff to join the trainings on aquaculture techniques at other seed production stations at least once a year. FTF training was confirmed to have been conducted only once in Pursat province in 2015, in which 20 people (fish farmers, FSPs and FiA staff) participated. The manual, the guideline and DVD for rice-cum-fish culture etc. produced under the project are still utilized by C/Ps, FSPs and fish farmers. The majority of equipment procured under the project are also still utilized except for several laptop computers which became outdated and one dissolved oxygen (DO) meter and one pH meter at Toek Vile Fish Seed Production Station which cannot be diagnosed properly as the display is written only in Japanese.

<Financial Aspect>

According to FiA, the estimated national budget for aquaculture extension activities is approximately 800 million Riels per year, which is not sufficient to cover extension activities in all provinces. However, according to FiA, the budget amount is expected to increase by 5% per year in accordance with the budget law of the Cambodian government. Moreover, FiA is supported by EU with 30 million EURO for six years starting from 2019, under "Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector: Aquaculture Component", in order to ensure a more sustainable, climate-resilient and inclusive growth in the aquaculture sector. Thus, extension activities can be increased accordingly. On the other hand, the amount of budget allocation is not sufficient for Toek Vile Fish Seed Production Station to respond to farmers' needs and technical problems and conduct maintenance of equipment, however, FiA does not plan to allocate more budget, because some functions of extension services are taken over to FSPs who are located easier access to farmers than the Toek Vile station.

<Evaluation Result>

Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose at project completion, however, it has not achieved the Overall Goal: annual production of small-scale aquaculture was increased to more or less 150 tons in target areas by project completion and has maintained 129 tons at the time of ex-post evaluation, however, the number of small-scale fish farmers who have increased profits/savings from fish farming was quantitatively 3% only against the target. For the sustainability, some problems were observed such as insufficient number of staff, technical skills and budget, however, countermeasures have been taken such as efforts to strengthen staff capacity through trainings and securing financial assistance from other donor etc.. As for efficiency, the project cost exceeded the plan.

¹ The number of staff in FiA Central office was unavailable.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- For maintaining the extension activities for farmers effectively, FiA should consider how to utilize the network between FSPs and farmers as much as possible, not only allocate sufficient staff and budget in both of central and provincial levels including Toek Vile Fish Seed Production Station.

Lessons Learned for JICA:

- As stated above, the Overall Goal has not been achieved. JICA should carefully consider social and economic situations of the target area/country such as the possibility of the decrease of the number of small-scale fish farmers due to a lack of water during fish culture season, expensive fish feed and migration to urban areas for work etc. in the next five to ten years when setting Overall Goal. While the external factors above is difficult to be foreseen, JICA should carefully consider those factors and risk as much as possible. The indicator should also not be set by the total volume only but take into account an average volume (average productivity (kg/100m²)).



Fish Ponds at Toek Vile Fish Seed Production Station with supplying water by the pump procured under the project



Fish Pond of Seed Producer in Siem Reap Province